

Claims

1. A file transfer method comprising:
 - receiving at a server a request from a client for a file, and
 - wherein in response to a request to download the requested file, the server
- 5 supplying one or more data segments which data segments together constitute content of the requested file and additional content selected for the user.
2. A file transfer method according to claim 1 in which the segments comprise a virtual file reference which corresponds to the requested file and additional content selected for the user.
- 10 3. A file transfer method according to claim 1 or claim 2 further comprising, at the client, operating a download manager to arrange the segments supplied from the server to form a complete file.
4. A file transfer method according to claim 1 in which the file requested by the client includes encoded audio information.
- 15 5. A file transfer method according to claim 1 in which the additional content is provided in a format identical to or compatible with the content of the file requested by the client.
6. A file transfer method according to claim 5 in which the segments are provided to the client in a format which appears to constitute a unified file.
- 20 7. A file transfer method according to claim 1 in which supplying the segments includes applying a data compression algorithm to the contents of the file in the course of forming the segments.
8. A file transfer method according to claim 7 further comprising the client uncompressing the segment contents to restore them to their original format.
- 25 9. A file transfer method according to claim 1 further comprising the server identifying the user of the client and selecting the additional content according to known information relating to the user.

10. A file transfer method according to claim 9, wherein said information is personal information provided by the user prior to the user making the file transfer request.
11. A file transfer method according to claim 9 further comprising the server requesting the user to complete a questionnaire soliciting personal information and selecting the additional content responsive to the supplied personal information.
12. A file transfer method according to claim 9, further including storing the personal information in a user database for future retrieval.
13. A file transfer method according to claim 1 in which the server receives a request from the client, and the server assigns the request a unique request identifier.
14. A file transfer method according to claim 13, further including storing a record of the request in a database, the record being identified by the request identifier.
15. A file transfer method according to claim 14, further including constructing from the unique identifier a virtual URL from which a file containing the data segments and additional content can be downloaded by the client.
16. A file transfer method according to claim 15, further including the server transmitting the virtual URL to the client.
17. A file transfer method according to claim 15, further including the client using part of the virtual URL as a local file store name for the downloaded file
18. A file transfer method according to claim 17 in which the virtual URL includes a name of an audio file.
19. A file transfer method according to claim 15 in which the virtual URL includes data to enable the client to perform error detection on the downloaded file.
20. A file transfer method according to claim 1, further including processing the segments prior to supplying them to the client to bring said segments into accordance with a requested file specification.

21. A file transfer method according to claim 1, further including, when a transfer is interrupted and subsequently resumed, on resumption, the server supplying to the client only those segments not previously supplied to the client.
22. A file transfer method according to claim 21, further comprising the server assembling the data segments and additional content into a virtual file and the server keeping a record of the position in the virtual file to which a download has progressed to a point of interruption, and, upon resumption, server re-starting the download from that position.
23. A file transfer method according to claim 1 in which the server supplies data segments to the client in a discontinuous stream.
24. A file transfer method according to claim 23 in which there are one or more pauses in the stream within or between segments.
25. A file transfer method according to claim 1, further including the client storing the received data on a data carrier.
26. A file transfer method according to claim 25, further including conveying the data carrier to a user.
27. A file transfer method according to claim 25, further including downloading said data segments to a user's computing device.
28. A file transfer method according to claim 1, further including the server returning to the client a list of identifiers that identify segments to be downloaded in order to provide the content requested by the user, and the client subsequently requesting the segments specified in the list.
29. A file transfer method according to claim 28 in which the identifiers identify real files on the server.
30. A file transfer server system comprising a request receiver to receive a request for a file from a server, a store for storing content requested by a user and additional content, and an interface arranged to send to the client a plurality of data segments in

turn that together constitute content of the requested file and additional content provided by the server.

31. A file transfer server system according to claim 30 in which the request receiver communicates with a client over a network link using a network protocol.
- 5 32. A file transfer server system according to claim 31 in which the network protocol is one of hypertext transfer protocol (HTTP), wireless application protocol (WAP) or file transfer protocol (FTP).
33. A file transfer server system according to any one of claims 30 to 32 in which the request receiver is embodied within a web server.
- 10 34. A file transfer server according to any one of claims 30 to 32 further comprising non volatile data storage for storing segments that constitute content of the requested file and additional content provided by the server on a data carrier.
35. A file transfer server according to claim 30 further comprising a data interface for transferring segments that constitute content of the requested file and additional
15 content provided by the server to a user's computing device.
36. A file transfer server system according to claim 30 including a selection engine for selecting data specific for the client.
37. A file transfer server system according to claim 36 in which the selection engine includes a dynamic file database.
- 20 38. A file transfer server system according to claim 37 in which the dynamic file database contains a record for each request, the record identifying the data segments to be sent to the client in order to meet the request.
39. A file transfer server system according to claim 37 in which the data segments and additional content are arranged into a virtual file and wherein the dynamic file
25 database contains a record for each request, the record indicating the position within the virtual file to which a client download has progressed.
40. A file transfer server system according to claim 30 including a user database.

41. A file transfer server system according to claim 40 in which the user database includes a list of users and personal information that relates to each user.
42. A file transfer server system according to claims 30 including a database server that manages at least one of the dynamic file database and the user database.
- 5 43. A file transfer server system according to claim 42 in which a selection engine is embodied within the database server.
44. A file transfer server system according to claim 30 wherein the data segments and additional content are arranged into a virtual file and the system returns to the client a virtual URL from which the virtual file can be downloaded by the client.
- 10 45. A file transfer server system according to claim 44 in which a request for data from the virtual URL is handled by a sending engine.
46. A file transfer server system according to claim 45 in which the sending engine is embodied within a file transfer server.
47. A file transfer server system according to claim 46 in which the file transfer server communicates with the client using one of hypertext transfer protocol (HTTP),
15 wireless application protocol (WAP) or file transfer protocol (FTP).
48. A file transfer server system according to claim 30 in which the server returns to the client a list of identifiers that identify segments to be downloaded to provide the content requested by the user.
- 20 49. A file transfer server according to claim 48 in which the identifiers identify real files on the server.
50. A file transfer server system according to claim 30 embodied by a computer system executing server software.
51. A file transfer server system according to claim 30 that operates in accordance with a
25 method of claim 1.

52. A computer program product comprising a computer-readable medium having encoded thereon instructions for server software executable on a computer system to perform a method of claim 1.
53. A download client comprising a computer system programmed to send a request to a file transfer server according to claim 30.
54. A method of operating a file transfer server to respond to a request for a file from a user, comprising receiving a request for a file and compiling a list of data segments to be sent in response to the request, which data segments together constitute content of the requested file and additional content provided by a service provider.
55. A method of operating a file transfer server according to claim 54 comprising identifying a user making the request and selecting segments based on the results of identifying the user.
56. A method of operating a file transfer server according to claim 55 in which, prior to responding to a file transfer request from a user, the server obtains personal information from the user, and that personal information is used order to determine the additional content to be sent to the user.
57. A method of operating a file transfer server according to claim 56 further including the server obtaining personal information by requesting the user complete a questionnaire.
58. A method of operating a file transfer server according to claim 56 or claim 57 further including storing the personal information in a user database for future retrieval.
59. A method of operating a file transfer server according to any one of claims 54 to 57 further including the server receiving requests from a client and returning data to the client using a network protocol.
60. A method of operating a file transfer server according to claim 59 in which the protocol is one of hypertext transfer protocol (HTTP), wireless application protocol (WAP) or file transfer protocol (FTP).

61. A method of operating a file transfer server according to claim 54 in which the server receives a request, and the server assigns the request a unique request identifier.

62. A method of operating a file transfer server according to claim 61 including constructing a record of the request in a database, the record being identified by the request identifier.

63. A method of operating a file transfer server according to claim 62 including using the unique identifier to construct a virtual URL from which the virtual file can be downloaded.

64. A method of operating a file transfer server according to claim 63 including the server returning the URL to a client.

65. A method of operating a file transfer server according to claim 64 in which the URL includes a name of an audio file.

66. A method of operating a file transfer server according to claim 63 in which the URL includes data to enable the client to perform error detection on the downloaded file.

67. A method of operating a file transfer server according to claim 55 comprising a further step of processing one or more data segments prior to them being sent to a client to bring them into accordance with a requested file specification.

68. A method of operating a file transfer server to claim 55 further comprising the server transferring the data segments to the user and, a client of when a transfer is interrupted and subsequently resumed, on resumption, sending only those segments not previously sent to the client are then sent to the client.

69. A method of operating a file transfer server according to claim 68 further comprising assembling the data segments, prior to sending, into a virtual file, and keeping a record of the position in the virtual file to which a download has progressed, and, upon resumption after interruption, re-starting the download from that position.

70. A method according to claim 1 wherein receiving requests includes receiving requests from a plurality of users and supplying includes the server supplying to the users in response to a request for a specified file data which differs between the users.
71. A method of storing and supplying data for a plurality of users, the method
5 comprising storing at a server a virtual file reference for each user, the virtual file reference for each user corresponding to requested data and additional content selected for the user, the method comprising receiving at the server a file download request containing said virtual file reference from a user download client and supplying data corresponding to the virtual file reference to the user download client
10 to form a contiguous real file, wherein the server does not store contiguous real files corresponding to at least some virtual file references.
72. A method according to claim 71, wherein the server constructs and stores a contiguous real file temporarily during an active download.
73. A method according to claim 71, further including the server responding to a
15 download request by dynamically concatenating real file fragments.
74. The method according to claim 73 wherein concatenating is performed without constructing a contiguous real file on the server.
75. A method comprising allocating at a server a virtual file reference to a download
20 request from a user, and mapping the virtual file reference to content selected for the user from among a plurality of available possible content resources available at the server and downloadable by the user as a complete file even if not stored on the server as a complete file.
76. A method of distributing requested information comprising receiving data identifying
25 a requestor of the information and sending the information to the requestor along with additional content selected for the requestor on the basis of the data.
77. The method of claim 76 wherein sending includes sending an identifier of a virtual file stored on a server and retrieving from a server the virtual file using the virtual file identifier.

78. The method of claim 76 or 77 wherein the additional content comprises advertising.
79. The method of claim 78 wherein the advertising is embedded in the information sent.
80. The method of any of claims 76-79 wherein the information comprises an audio book.
81. The method of any of claims 76-79 wherein the information comprises an
5 entertainment product.
82. The method of claim 81 wherein the entertainment product includes a MIME file.
83. The method of any of claims 76-79 wherein the information comprises one or more computer programs.
84. The method of any of claims 76-79 wherein the information comprises a primarily
10 textual product.
85. The method of any of claims 76-79 wherein the information comprises an educational product.
86. The method of claim 76 or claim 77 wherein the data identifying a requestor includes preference data supplied by the requestor and the additional content comprises content
15 selected to likely be of interest to individuals who provide similar preference data.
87. The method of claim 86 wherein the preference data is supplied before the request.
88. The method of claim 87 wherein the preference data is supplied along with the request.
89. A method of distributing advertising, comprising: receiving at a server a request from
20 a client for a download of specified information; also receiving at the server profiling data characterizing a user of the client who issues the download request; analyzing the profiling data and selecting from among a plurality of available advertisements one or more advertisements that may be expected to appeal to an individual who has provided the profiling data; assembling the specified information and the specified
25 information into a unitary download and providing to the client the unitary download.

90. The method of claim 89 wherein the unitary download is a virtual file assembled in response to, and at the time of, the client requesting said download.

91. The method of claim 90 further including providing to the client a download manager utility that resumes the download, following an interruption in the download process,
5 at a point in the virtual file corresponding to the end of the portion of the virtual file already sent before said interruption.

92. The method of any of claims 89 – 91 further including billing a provider of an advertisement after it has been downloaded.

93. The method of any of claims 89-91 wherein an advertisement is an audio information
10 stream when the specified information is audio information.